

# **Exhibit 24**

## **(Part 3)**

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## **2. Mr. Weir Is Unable To Control For Various Non-Quantifiable Attributes In His Regression Analysis**

80. There exists numerous non-quantifiable attributes of ovens that likely impact price. These attributes typically are not on the product specification sheets, but are important purchase drivers based upon documentary evidence and customer online reviews. As these attributes are non-quantifiable, Mr. Weir is unable to control for them in his regression analysis, causing omitted variable bias whenever the non-quantifiable attributes are correlated to the included explanatory variables. Provided below are examples of non-quantifiable attributes that may be correlated with Mr. Weir's explanatory variables, and, thus, show Mr. Weir's regression analysis is not reliable from an economic and damages perspective.

- a. Aesthetic Appeal And Design. A key non-quantifiable attribute that cannot be accounted for in Mr. Weir's regression analysis is the aesthetic appeal of an oven. A number of Whirlpool presentations and marketing documents identified aesthetics or design as one of the most influential purchase drivers. [REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED] In addition, "Design" is listed as one of the consumer ratings and review metrics for most manufacturers, including Whirlpool, KitchenAid, Maytag, and Samsung.<sup>182</sup>
- b. Ease Of Use. Numerous documents suggest that consumers value the "ease of use" as one of the most important attributes. [REDACTED]  
[REDACTED]<sup>183</sup> In another

<sup>180</sup> "Vesta Purchase Influencers," Whirlpool Presentation dated May, 2011. (WSC0026642 – 687 at 644.) (Bracketed text added for clarification.)

<sup>181</sup> "Cooking: Cleaning Insights," Whirlpool Presentation dated January 7, 2014. (WSC0012939 – 966 at 957.)

<sup>182</sup> For example, see the different categories under customer ratings for Whirlpool oven model WEE730H0DS. ("6.2 cu. ft. Front-Control Electric Stove with Fan Convection | Whirlpool." (<https://www.whirlpool.com/kitchen/cooking/ranges/slide-in/p.6.2-cu.-ft.-front-control-electric-stove-with-fan-convection.wee730h0ds.html>, viewed on March 6, 2018.)) Written customer reviews also demonstrate the importance of design and aesthetic appeal. For example, one of the most recent consumer reviews for Whirlpool oven WEE745H0FE was titled "Stylish look" by the reviewer. Numerous similar reviews and comments such as "beautiful range," "beautiful addition to our kitchen," and "great style" can be found across all different models and brands, indicating that aesthetics and design play an important role in consumers' purchase decisions. ("6.4 Cu. Ft. Slide-In Electric Range with True Convection | Whirlpool." (<https://www.whirlpool.com/kitchen/cooking/ranges/slide-in/p.6.4-cu.-ft.-slide-in-electric-range-with-true-convection.wee745h0fe.html?bvstate=pg:2/ct:r>, viewed on April 4, 2018.))

<sup>183</sup> Whirlpool Internal Document (untitled). (WSC0070273 – 279 at 273.)

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document, which listed [REDACTED]  
 [REDACTED]  
 [REDACTED]  
 [REDACTED]  
 [REDACTED]

<sup>184</sup> Similarly, “Ease of Use” also is listed as one of the consumer ratings and reviews metrics for most manufacturers, including Whirlpool, KitchenAid, and Maytag. Numerous consumers addressed the performance of the “Ease of Use” attribute of their ovens in their review titles, including comments such as “[e]asy operation” and “easy to use an[d] affordable.”<sup>185</sup>

#### **D. Mr. Weir’s Regression Yields Unreasonable Results**

81. Mr. Weir stated that regression analysis “identifies and quantifies the relationship between two or more variables.”<sup>186</sup> Mr. Weir provided an overview of statistical measures that “can be used to evaluate the reliability of the results of the study.”<sup>187</sup> In addition to “objective, mathematical calculations produced mechanically by statistical software packages” as stated by Mr. Weir,<sup>188</sup> a regression’s reliability can be evaluated based upon the review of the regression results and their implications. Regression results (or implications from regression results) that are counter to economic theory or reasonable expectations can demonstrate that a regression model is fundamentally flawed, unreliable, and incapable of evaluating the relationship between the dependent variable and the variable(s) of interest.
82. Mr. Weir’s regression includes results and implications that are unreasonable and counter to economic theory and reasonable expectations about the relationships between prices and product

<sup>184</sup> “Cooking: Cleaning Insights,” Whirlpool Presentation dated January 7, 2014. (WSC0012939 – 966 at 941 – 942.) (Bracketed text added for clarification.)

<sup>185</sup> See, e.g., “30-inch Freestanding Electric Range with Steam Clean | Whirlpool.” (<https://www.whirlpool.com/kitchen/cooking/ranges/single-oven-freestanding/p.30-inch-freestanding-electric-range-with-steam-clean.wfe3711vs.html?>, viewed on April 4, 2018.) See also “Frigidaire 30” Freestanding Electric Range White-FFEF3011LW.” (<https://www.frigidaire.com/Kitchen-Appliances/Ranges/Electric-Range/FFEF3011LW/>, viewed on April 4, 2018.)

<sup>186</sup> Weir Declaration, p. 26.

<sup>187</sup> Weir Declaration, p. 32.

<sup>188</sup> Weir Declaration, p. 32.



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attributes. Mr. Weir's regression is unreliable for evaluating claimed damages in light of these unreasonable results, which include at least (a) counterintuitive coefficients on variables in Mr. Weir's regression and (b) the unreasonable implication from Mr. Weir's regression and claimed damages calculations that ovens with AquaLift with identical capacities (and thus value to consumers from a cleaning feature) would have significantly different claimed price premiums.

**1. Mr. Weir's Regression Yielded Coefficients That Are Counterintuitive**

83. Mr. Weir's preliminary hedonic regression results with respect to LG's EasyClean feature (i.e., a cleaning feature offered by LG) can be interpreted as follows:

- a. On average, the price of an oven equipped with EasyClean will be 6% less than the price of a manual clean oven, holding all other attributes the same across both ovens.
- b. On average, the price of an oven equipped with pyrolytic self-clean and EasyClean will be 6.8% less than the price of a manual clean oven, holding all other attributes the same across both ovens.<sup>189</sup>

In other words, according to Mr. Weir's regression results, adding EasyClean to a manual clean oven, holding all other attributes constant, results in a lower price. Moreover, adding pyrolytic self-clean and EasyClean to a manual oven, holding all other attributes constant, reduces the price by a greater amount than only adding EasyClean.

84. These regression results are counterintuitive, as adding an additional cleaning feature, while keeping all other attributes the same, should not reduce the price of an oven. At the very least, adding an additional cleaning feature could have zero impact on price. However, given that EasyClean is a cleaning feature, which the Plaintiffs' damages theory (as presented by Mr. Weir) implies is a critical price differentiator and purchase driver, it would be expected to have some positive impact on price.

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<sup>189</sup> Weir Declaration, Exhibit 4.



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85. In light of the above observation, Mr. Weir's regression failed in isolating the price impact of (at least) EasyClean. One possible reason for this failure is Mr. Weir has failed to account for all relevant oven attributes that influence purchase decisions and affect price.<sup>190</sup> If such omitted descriptors are correlated to EasyClean or any of the other included attributes (such as AquaLift), Mr. Weir's regression coefficients will be unreliable. As a result, Mr. Weir's regression results and claimed price premium are unreliable from an economic and damages perspective.

**2. Mr. Weir's Regression Results Unreasonably Imply That Challenged Products With The Same Capacity Would Have Different Claimed Price Premiums**

86. Mr. Weir's claimed damages model utilizes a percentage claimed price premium factor that is applied to aggregate dollar sales values from purchases of the Challenged Products.<sup>191</sup> However, as discussed above, the Challenged Products were sold at a wide variety of prices during the putative Class period, even after controlling for relevant considerations such as oven capacity. When Mr. Weir's claimed percentage price premium factor is applied to that wide variety of prices, it implies that ovens with the same capacity would have had different amounts of value placed on AquaLift.

87. The nature of AquaLift and oven cleaning in general suggests that the contribution of AquaLift to an oven should be constant for ovens of the same capacity.

- a. As discussed above, ovens with AquaLift include a special coating on the interior of the oven.<sup>192</sup> Hence, the additional cost to Whirlpool brands to implement AquaLift would be a function of the size (e.g., capacity) of the oven, with larger ovens requiring a larger cost to implement AquaLift (and likely a higher price associated with such an oven), holding other factors constant.

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<sup>190</sup> See Section X.C.

<sup>191</sup> Mr. Weir's actual calculation of the claimed damages base relied upon wholesale purchases of the Challenged Products rather than retail purchases of the Challenged Products. (Weir Declaration, p. 40.)

<sup>192</sup> "AquaLift Technology: Get Your Oven Clean In Less Than 1 Hour!" presentation slides. (Ganus Deposition, Exhibit 32. (WSC0024334 – 370, at 342.))

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- b. From a consumer's perspective, the value of a self-cleaning function would be related to the amount of oven space that the consumer would have to clean absent the self-cleaning function. Hence, the additional benefit to the consumer generally would be a function of the size (e.g., capacity) of the oven, with larger ovens providing consumers with a larger benefit from the presence of AquaLift (and likely a higher price).
88. However, contrary to these factors, Mr. Weir's regression analysis and resulting damages calculation unreasonably claim that ovens with the same capacity would have had significantly different amounts of value placed on AquaLift. This can be seen from illustrative calculations based upon Mr. Weir's claimed percentage price premium and the prices of Challenged Products as sold at H.H. Gregg, which are presented in **Exhibit 18** and **Figure 11**.



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- a. Claimed Price Premium Range For 5.8 Cubic Feet Ovens. Prices for ovens with a capacity of 5.8 cubic feet range from \$90 to \$2,999 (after removing observations less than or equal to \$50). When multiplied by Mr. Weir's claimed 10.83% price premium factor, this price range implies that claimed price premiums for ovens of the same 5.8 cubic feet capacity (and hence ovens receiving the same contribution from AquaLift) range from \$10 to \$325.
- b. Claimed Price Premium Range For 6.2 Cubic Feet Ovens. Prices for ovens with a capacity of 6.2 cubic feet range from \$62 to \$1,999 (after removing observations less than or equal to \$50). When multiplied by Mr. Weir's claimed 10.83% price premium factor, this price range implies that claimed price premiums for ovens of the same 6.2 cubic feet capacity (and hence ovens receiving the same contribution from AquaLift) range from \$7 to \$217.
- c. Claimed Price Premium Range For 6.4 Cubic Feet Ovens. Prices for ovens with a capacity of 6.4 cubic feet range from \$85 to \$3,099 (after removing observations less than or equal to \$50). When multiplied by Mr. Weir's claimed 10.83% price premium factor, this price range implies that claimed price premiums for ovens of the same 6.4 cubic feet capacity (and hence ovens receiving the same contribution from AquaLift) range from \$9 to \$336.

89. According to Mr. Weir's regression analysis and claimed damages approach, customers who paid at the higher end of the price range for each oven capacity would be entitled to claimed damages that are at least 3.5 times the purchase price that other customers paid for an oven of the same capacity.<sup>193</sup> Mr. Weir has not explained why the contribution of AquaLift to an oven would vary to such a degree. This lack of explanation is especially troublesome in light of the relationship between oven size, the additional cost of AquaLift, and the additional value from the feature to consumers.

**E. Mr. Weir Does Not Test Whether His Regression Results Are Applicable To Other Retail Sales Data Or Other Geographic Areas**

90. Mr. Weir claimed that the results of his hedonic regression "pertain to sales throughout the nation and all of the Whirlpool brand ovens, and across multiple years."<sup>194</sup> However, in order for a regression analysis to yield results that can be applied reliably to a broad set of purchases (e.g.,

<sup>193</sup> Calculations:  $\$325 \div \$90 = 3.61$ .  $\$217 \div \$62 = 3.5$ .  $\$336 \div \$85 = 3.95$

<sup>194</sup> Weir Declaration, p. 37.



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“throughout the nation and all of the Whirlpool brand ovens, and across multiple years”<sup>195</sup>), the regression analysis must be conducted on data that is representative of the circumstances consumers face in the marketplace (i.e., “throughout the nation and all of the Whirlpool brand ovens, and across multiple years”). Mr. Weir’s regression analysis only was performed on data from one retailer and only certain geographic areas. Mr. Weir has not demonstrated that the results of his regression can be applied to all retailers or all geographic areas associated with the Challenged Products.<sup>196</sup>

91. Mr. Weir described the “data necessary to conduct a hedonic regression analysis and damage calculation in this litigation” as coming from “one of several sources”, including “sales data from certain retailers.”<sup>197</sup> Mr. Weir identified those retailers as H.H. Gregg, Home Depot, Lowe’s, Best Buy, and Sears.<sup>198</sup> However, Mr. Weir’s description and identification of retailers appears to imply that his regression analysis was performed using sales data from multiple retailers. In fact, Mr. Weir’s regression analysis was performed using sales data only from one retailer, H.H. Gregg, and thus the results of his regression analysis do not apply to purchases of the Challenged Products from other retailers.<sup>199</sup>

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<sup>195</sup> Weir Declaration, p. 37.

<sup>196</sup> In addition, Mr. Weir omitted numerous models from his regression data that were sold by H.H. Gregg between 2012 and 2017. Specifically, Mr. Weir included only 205 of 2,567 models, omitting 2,362 models from the data upon which his regression was conducted. The 205 models that Mr. Weir included represent 8 of the 29 brands included in the H.H. Gregg retail sales dataset, with Mr. Weir omitting the remaining 21 brands from the regression data. (See **Exhibit 21.**)

<sup>197</sup> Weir Declaration, p. 33.

<sup>198</sup> Weir Declaration, p. 33, fn. 42.

<sup>199</sup> See, e.g., Weir Declaration, Exhibit 4, in which Mr. Weir identifies the source for his regression results as “H.H. Gregg Sales Data.” The sales data provided from other retailers generally appears to include only sales of Whirlpool-manufactured ovens and thus would not have been appropriate for use in a hedonic regression that incorporates ovens from other manufacturers (such as the regression presented by Mr. Weir). However, the data limitations associated with the data from other retailers is contrary to Mr. Weir’s claim that “[t]he data necessary to conduct a hedonic regression analysis and damage calculation in this litigation is already available, or can easily be obtained.” (Weir Declaration, p. 33.) Given these data limitations, Mr. Weir’s claim is insufficient to demonstrate that his proposed hedonic regression analysis can be implemented to calculate a claimed price premium applicable on a Class-wide basis.

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92. Mr. Weir calculated Plaintiffs' claimed price premium damages by multiplying (a) claimed price premium (i.e., 10.83% based upon his regression analysis) and (b) **Redacted**

**Redacted**<sup>200</sup> Mr. Weir's claimed price premium and claimed total dollar sales of the Challenged Products were estimated using different data as discussed below.

a. Claimed Price Premium. Mr. Weir used sales data from H.H. Gregg to perform his regression analysis.<sup>201</sup> As such, his regression analysis and results, including the claimed price premium, only apply to the prices offered by H.H. Gregg.

b. Claimed Total Dollar Sales Of The Challenged Products. Mr. Weir's estimation of total dollar sales was based upon (i) units sold according to Whirlpool's wholesale data and (ii) average prices from H.H. Gregg, Sears, Lowe's, and Best Buy.<sup>202</sup>

93. By applying the claimed price premium from his regression analysis to all Challenged Product sales that took place at numerous retailers besides H.H. Gregg, Mr. Weir assumed that his regression results apply to all retailers and all geographic areas. It is inappropriate for Mr. Weir to extrapolate his regression results to all retailers and geographic areas for at least the reasons detailed below.

a. H.H. Gregg Accounts For Only A Small Portion Of Total Sales. H.H. Gregg sales of the Challenged Products account for only a small portion (i.e., **Re** of wholesale units sold determined by Mr. Weir (i.e., **Red**). (See Exhibit 19.) Thus, Mr. Weir's regression analysis was performed using only **Re** of the claimed Challenged Product sales for which total claimed price premium damages are calculated. Mr. Weir provides no analysis or support that his regression results are applicable to the other **Red** of claimed Challenged Product sales.<sup>203</sup>

<sup>200</sup> Weir Declaration, p. 41.

<sup>201</sup> Weir Declaration, Exhibit 4.

<sup>202</sup> Weir Declaration, p. 40.

<sup>203</sup> As discussed elsewhere in my declaration, Mr. Weir's claimed damages base is overstated because, among other reasons, Mr. Weir used nationwide wholesale shipments of the Challenged Products (as opposed to wholesale shipments to only at-issue states). If Mr. Weir attempts to adjust his claimed damages base only to include claimed unit sales made in the at-issue states, his claimed damages base still would include a large percentage of Challenge Product sales not made by H.H. Gregg. Thus, Mr. Weir's claimed damages calculations still would be unreliable due to his extrapolation of regression results specific to H.H. Gregg, among other reasons.



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- b. H.H. Gregg Sales Only Include Two Out Of The Six States At Issue. The H.H. Gregg sales data contain sales in only two out of the six states for which Plaintiffs are seeking Class certification (i.e., Florida and New Jersey). Mr. Weir provides no support that his regression results, which are based primarily upon sales in 18 states that are not included in the proposed Class, are applicable to the claimed Challenged Product sales in the at-issue states. The observed variation in H.H. Gregg retail prices across states (**Section IX.B.4**) calls into question the reliability of Mr. Weir's proposed extrapolation of his regression results to all putative Class states.
- c. Prices Vary Across Retailers. As prices for a given model of the Challenged Products vary across retailers (*See Exhibit 20*) and for reasons unrelated to AquaLift, Mr. Weir has not established that his regression results based upon H.H. Gregg sales data apply to all Challenged Product sales across all other retailers. For example, factors such as a retailer's own brand (e.g., Sears's Kenmore products), propensity to provide discounts, and customer service may influence pricing.
- d. H.H. Gregg's Bankruptcy May Have Impacted Regression Results. Mr. Weir's regression analysis uses H.H. Gregg sales data during the January 2012 through July 2017 time period.<sup>204</sup> H.H. Gregg filed for bankruptcy on March 6, 2017.<sup>205</sup> Mr. Weir has included time and state dummy variables in his regression to account for price variation explained by time (e.g., inflation and nationwide market conditions such as recessions and booms) and states (e.g., population demographics).<sup>206</sup> However, these dummy variables do not control for price variation attributable to stores. Given H.H. Gregg began closing stores in advance of declaring bankruptcy,<sup>207</sup> Mr. Weir's regression analysis and results (i.e., coefficients on oven attributes) may have been biased by store-related variation (i.e., discounts) not controlled for by Mr. Weir's time and state dummy variables.

**F. The Data Underlying Mr. Weir's Regression Analysis Included Various Anomalies**

94. Mr. Weir performed various steps to prepare the data used to conduct his regression. However, due to the nature of the steps that Mr. Weir performed, Mr. Weir included in his regression information from various transactions that appear to represent anomalies in the data. Mr. Weir

<sup>204</sup> Weir Declaration, p. 37.

<sup>205</sup> hhgregg, Inc. Form 8-K dated March 6, 2017.

<sup>206</sup> Weir Declaration, Exhibit 4. Based upon a review of Mr. Weir's code used to perform his regression analysis, Mr. Weir used quarter-year dummy variables, meaning his time period dummy variables control for price variation that can be explained from changes quarter-to-quarter.

<sup>207</sup> Public news sources indicate that H.H. Gregg's poor business performance began in as early as 2016. For example, in August 2016, H.H. Gregg announced the closure of six stores. ("Struggling retailer HHGregg plans closures for six stores," dated August 9, 2016. (<https://www.ibj.com/articles/59866-struggling-retailer-hhgregg-plans-closures-for-six-stores>, viewed on March 23, 2018.))



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provided neither an analysis of these transactions nor a justification for including these transactions in his regression.

95. Mr. Weir's regression was performed on a set of data in which each observation, or each line-item in the data, represented the aggregation of sales data by model, store location, and quarter.<sup>208</sup> For example, one of the observations included in Mr. Weir's regression represents the average sales price, aggregate unit sales, and aggregate dollar sales for Whirlpool oven model WEC530H0DB sold during the Q2 2016 at H.H. Gregg store number 176.<sup>209</sup> After performing this step of aggregating by model, store location, and quarter, Mr. Weir then removed from his dataset any aggregated observations with dollar sales or unit sales that were less than or equal to zero. In other words, Mr. Weir excluded from his dataset any aggregated observations in which a model had zero or negative dollar sales (or unit sales) in a given quarter from a given store.<sup>210</sup>
96. However, by preparing his data in such a manner, Mr. Weir included in his observations sales information from individual transactions that appear to be anomalies.
  - a. For example, so long as a model sold a positive number of units for positive dollar sales at a given store over an entire quarter, Mr. Weir would include the information from the individual transactions involving that model at that store and in that quarter. However, the individual transaction data could include either dollar sales or unit sales that were less than or equal to zero.
  - b. Additionally, Mr. Weir's data preparation included transactions that had positive dollar sales and unit sales at unreasonably low prices (relative to the price one might expect for a typical transaction).

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<sup>208</sup> Weir Declaration Supporting Materials. ("1 Ovens - Regression.do.")

<sup>209</sup> See, e.g., Weir Declaration Supporting Materials ("Ovens - HHGregg - Regression.dta"), which includes the identified observation. Mr. Weir performs additional steps to this dataset before performing his regression. (Weir Declaration Supporting Materials. ("1 Ovens - Regression.do."))

<sup>210</sup> Weir Declaration Supporting Materials. ("1 Ovens - Regression.do.")

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97. To demonstrate the number of such outlier sales that were included in Mr. Weir's regression data, **Exhibit 22** and **Table 9** summarize the transactions underlying Mr. Weir's regression data by the average retail price.<sup>211</sup>

98. Mr. Weir's regression data included information from the following transactions (for which Mr. Weir provided neither explanation nor justification).
- a. Mr. Weir's regression data included information from 8 transactions with negative average prices, which had aggregate dollar sales of approximately -\$1,450.
  - b. Mr. Weir's regression data included information from 16 transactions with positive average prices of less than or equal to \$1, which had aggregate dollar sales of \$3.35.

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<sup>211</sup> Mr. Weir's rules for dropping aggregate observations (i.e., dropping them if they include negative dollar sales and/or negative unit sales) were used to determine which aggregate observations were omitted from the data used to conduct his regression. Based upon these rules, the individual transactions that made up those aggregate observations also were identified. Once the dropped aggregate observations were identified, and once the corresponding individual observations comprising those aggregate observations were identified, the remaining observations yielded the individual observations that were used in Mr. Weir's regression analysis. Identifying the set of individual transactions underlying Mr. Weir's regression data allows for the determination of outlier individual transactions that remained in the data Mr. Weir used for his regression analysis.

<sup>212</sup> Average prices are used because some transactions include multiple unit sales. A transaction is indicated as being in a price range if the average price of the transaction is greater than the lower bound and less than or equal to the upper bound of the price range.



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c. Mr. Weir's regression data included information from 234 transactions with average prices between \$1 and \$100, which had aggregate dollar sales of approximately \$13,800. Of these transactions, 84 had average prices less than or equal to \$50.<sup>213</sup>

99. Mr. Weir's regression data included information from transactions that do not appear to represent standard purchases of household appliances like ovens. Mr. Weir provided neither an explanation nor a justification for including information from these transactions in his regression data (or why his claimed percentage price premium should be applied to these purchases).

#### **XI. ECONOMIC EVALUATION OF MR. WEIR'S CONJOINT ANALYSIS**

100. Mr. Weir also attempted to implement a proposed percentage price premium approach using a conjoint survey analysis. Mr. Weir first designed and conducted a conjoint survey and then used the survey response data to perform market simulations using Sawtooth Software. Based upon his survey results and market simulations, Mr. Weir opined to a claimed price premium attributable to AquaLift of 10.58%.<sup>214</sup>

101. However, Mr. Weir's conjoint analysis, like his regression analysis, does not address or resolve any of the individual inquiry issues or other deficiencies in his proposed price premium approach that are discussed throughout my declaration. In addition, Mr. Weir's conjoint survey and market simulations both contain flaws that negate their relevance or reliability for demonstrating or

<sup>213</sup> In addition to the general inclusion of data from outlier transactions, Mr. Weir's regression analysis was conducted on aggregated observations that were wholly or substantially derived from such outlier transactions. For example, the underlying data for Mr. Weir's regression analysis included an aggregate observation for Frigidaire model FFGF3023LW sold in a Florida store during the second quarter of 2017 at an "average price" of \$6.49 per oven. (Weir Declaration Support Materials. ("1 Ovens - Regression.do," "Ovens - HHGregg - Regression.dta," and "Model Attributes.dta.")) As seen in **Exhibit 22**, this aggregate observation is based upon a single individual transaction that occurred during the week of April 9, 2017. Similarly, the underlying data for Mr. Weir's regression analysis included an aggregate observation for Samsung model NX58J5600SG sold in an Illinois store during the second quarter of 2017 at an "average price" of \$11.99 per oven. (Weir Declaration Support Materials. ("1 Ovens - Regression.do," "Ovens - HHGregg - Regression.dta," and "Model Attributes.dta.")) As seen in **Exhibit 22**, this aggregate observation is based upon three individual transactions that occurred during that quarter but ultimately reflects the unit sales (i.e., 1 oven) and dollar sales (i.e., \$11.99) for a single individual transaction that occurred during the week of April 9, 2017. Mr. Weir provided neither an explanation nor a justification for including such observations or what such data points mean.

<sup>214</sup> Weir Declaration, p. 20.



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quantifying claimed “price premium” damages associated with AquaLift on a Class-wide basis using common proof.

**A. Mr. Weir’s Descriptions Of Cleaning Features Are Incomplete And Inaccurate**

102. As part of his conjoint survey, Mr. Weir provided survey participants with descriptions of the various oven attributes that differentiate the ovens displayed in each choice set. Mr. Weir provided descriptions and/or varying levels for each of the following attributes: (a) oven brand, (b) type of oven (i.e., wall oven or range), (c) fuel type, (d) oven finish, (e) cleaning feature, (f) price, and (g) additional features (i.e., digital controls, convection, number of racks, control lockout, and front or rear controls).<sup>215</sup>
103. Mr. Weir’s cleaning feature descriptions as contained in his conjoint survey are presented in **Table 10**. Mr. Weir did not provide support for these cleaning feature descriptions. Instead, Mr. Weir appears to have created his own descriptions of these cleaning features, with no explanation as to how he formulated the descriptions.<sup>216</sup> Mr. Weir also did not conduct a sensitivity analysis to see if his results were impacted by (or sensitive to) the descriptions provided.

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<sup>215</sup> Weir Declaration, pp. 10 – 12 and Exhibit 3.

<sup>216</sup> Mr. Weir’s conjoint survey does not include steam clean as a cleaning feature. As discussed elsewhere in my declaration, this is inconsistent with Mr. Weir’s regression analysis.

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**Table 10**  
**Mr. Weir's Cleaning Feature Descriptions As Presented To Survey Participants<sup>217</sup>**

Pyrolytic self-clean	AquaLift self-clean	AquaLift partial-clean	Manual clean (no self-clean)
Traditional self clean. Uses high heat to self clean. Cleaning cycle will take several hours, and may cause unpleasant odors. Ashes may need to be swept out of the oven after cleaning cycle.	Uses water and low heat to self clean. Cleaning cycle will take less than an hour, and will not cause odors. Drippings may need to be wiped out of the oven after cleaning cycle.	Uses water and low heat to help loosen soils from the bottom of the oven, but other areas of the oven – including the top, back, sides, and door of the oven cavity – require manual cleaning. Cleaning cycle will take less than an hour, and will not cause odors.	This oven cannot self clean. The oven cavity can only be cleaned manually (e.g., scrubbing with soap and water, using a chemical oven cleaner).

104. Given that the purpose of Mr. Weir's conjoint survey was to identify the difference in consumer preferences between "AquaLift self-clean" and, what Mr. Weir termed, "AquaLift partial-clean," these cleaning feature descriptions are critical to the validity of the survey design and the reliability of the survey results. From an economic and damages perspective, it is unclear how sensitive Mr. Weir's conjoint survey results and the claimed price premium based upon these results are to his descriptions of the cleaning features.
105. As discussed in the remainder of this section, based upon my review of documentary evidence and deposition testimony and my independent research, Mr. Weir's cleaning feature descriptions are incomplete and inaccurate with respect to the actual performance of AquaLift.

**1. Cleaning Feature Descriptions Omit Relevant Advantages And Disadvantages**

106. As discussed in **Section VII**, there are three general categories of cleaning features (i.e., pyrolytic self-clean, steam clean, and low-heat self-clean), each with their own benefits. Mr. Weir only provided selective information to survey participants regarding the advantages and disadvantages of the pyrolytic self-clean and AquaLift self-clean methods. For example, in describing pyrolytic

<sup>217</sup> Weir Declaration, p. 12 and Exhibit 3.



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self-clean, Mr. Weir did not mention various disadvantages including potential damage to the oven, safety concerns, and cooktop disablement during a cycle. In describing the “AquaLift self-clean” and pyrolytic self-clean methods, Mr. Weir failed to note that oven doorframes and windows would require manual cleaning, which are discussed in publically available sources of information (as discussed in **Section VII.A.** and below).

107. Mr. Weir has provided no explanation as to why he omitted some advantages and especially disadvantages of AquaLift and pyrolytic self-clean. Additionally, to the extent that consumers would weigh the omitted disadvantages as being more important than the omitted advantages, Mr. Weir’s descriptions would lead survey respondents to overvalue AquaLift self-clean (and pyrolytic self-clean) relative to the AquaLift partial-clean feature that he claimed represented what consumers actually received from AquaLift.<sup>218</sup>

**2. Labels And Descriptions For AquaLift Self-Clean And AquaLift Partial-Clean Likely Alter Survey Responses**

108. The potential issues with Mr. Weir’s decision to provide only limited information regarding the cleaning features to survey participants are apparent when comparing Mr. Weir’s descriptions of “AquaLift self-clean” and “AquaLift partial-clean” (Mr. Weir’s portrayal of what customers receive from AquaLift).<sup>219</sup> Mr. Weir labelled his description choices associated with AquaLift as “AquaLift self-clean” and “AquaLift partial-clean.” It is likely that such descriptions cause unreliable survey results for at least the following reasons:

- a. **“Partial-Clean” Carries A Negative Connotation.** Labeling the alternative self-clean feature “AquaLift partial-clean” likely biased survey responses, given that the feature he compared it to was labeled “AquaLift self-clean.” The term “partial-clean” as a heading descriptor conveys to survey participants an undesirable less-valued attribute when compared to an “AquaLift self-clean” heading descriptor. It is unlikely that an oven manufacturer would

<sup>218</sup> Weir Declaration, p. 19.

<sup>219</sup> Weir Declaration, p. 19.



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market a cleaning feature as a partial-cleaning feature. Mr. Weir's labeling of the alternative AquaLift self-clean feature as "AquaLift partial-clean" likely biased survey responses. It does not appear that Mr. Weir tested the impact of his labeling on his survey results. It appears that Mr. Weir developed the label and description for "AquaLift partial-clean" on his own, as he has provided no explanation or source. However, using "partial-clean" as the alternative claim runs contrary to the incentives Whirlpool would face if it used a different claim other than "self-clean."<sup>220</sup>

- b. Inclusion Of Manual Cleaning In "AquaLift Partial-Clean" But Not "AquaLift Self-Clean" Biases Survey Responses. Mr. Weir described the manual cleaning aspect in his two AquaLift-related descriptions as follows:
- i. "Drippings **may** need to be **wiped out** of the oven after cleaning cycle" (for "AquaLift self-clean"); and
  - ii. "other areas of the oven – including the top, back, sides, and door of the oven cavity – **require manual cleaning**" (for "AquaLift partial-clean").<sup>221</sup>

However, Plaintiffs' characterization of the claimed attributes of AquaLift differed from the characterization provided by Mr. Weir. Rather than stating that "drippings **may** need to be **wiped out**" from an oven with AquaLift, as in Mr. Weir's description,<sup>222</sup> Plaintiffs characterized Whirlpool's allegedly misleading marketing of AquaLift as claiming that consumers can "remove residual water and *loosened soils* with a *sponge or dry cloth*."<sup>223</sup> Whirlpool also published an AquaLift cleaning tutorial that clearly shows excess water and loosened soils will need to be cleaned from the bottom and sides of the oven cavity.<sup>224</sup>

Contrary to Mr. Weir's description that AquaLift results in "drippings" that can be wiped away, which implies that the stains have been completely detached from the oven's interior surface, Plaintiffs and Whirlpool characterize the results as "loosened soils," which may not be fully detached from the surface and may require more effort than "drippings" would. This approach to describing AquaLift is in contrast to the "AquaLift partial-clean" attribute used in the conjoint survey, for which Mr. Weir has made "required manual cleaning" a focal point of his description. By deemphasizing the effort associated with "AquaLift self-clean" and emphasizing the required manual cleaning aspects of "AquaLift partial-clean," Mr. Weir appears to have exaggerated the differences between the two (likely causing an altering of

<sup>220</sup> As discussed later in my declaration, presenting survey participants with "AquaLift self-clean" and "AquaLift partial-clean" as two out of the four cleaning features also is an issue with respect to ensuring participants are not aware of the purpose (or goal) of the survey.

<sup>221</sup> Weir Declaration, p. 12. (Bold text added for emphasis.)

<sup>222</sup> Weir Declaration, p. 12. (Bold text added for emphasis.)

<sup>223</sup> First Amended Complaint, p. 2 and Exhibit 4.

<sup>224</sup> "AquaLift TM Technology Cleaning Methodology," video, dated February 3, 2012. (<https://www.youtube.com/watch?v=zfKLpQdZD5c&lc=Ugh7Wq4BZDsT-XgCoAEC>, viewed on March 23, 2018.)

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survey responses).<sup>225</sup> There is no evidence presented in his declaration that Mr. Weir tested the impact of the content of his descriptors on his survey results.

- c. Oven Door Cleaning Is Not A Differential Aspect Across Cleaning Features. In his description of “AquaLift partial-clean,” Mr. Weir states that the “top, back, sides, and **door** of the oven cavity” would require manual cleaning.<sup>226</sup> However, it is my understanding that all cleaning features (i.e., pyrolytic self-clean, steam clean, and low-heat self-clean) require manual cleaning for the oven door (including the frame and window). Thus, Mr. Weir overstates the limitations of “AquaLift partial-clean” by including the oven door as an area that would require manual cleaning in the description for “AquaLift partial-clean,” but not for the other defined cleaning choices.

**B. Mr. Weir’s Conjoint Survey Omits Attributes And Attribute Levels That Would Have Been Relevant To Consumers Purchasing Ovens**

109. Mr. Weir stated that he conducted eight “cognitive interviews” from which he “gained a better understanding of the drivers of consumer choices underlying oven purchases which aided [his] design of the conjoint survey.”<sup>227</sup> Based upon the Weir Declaration, in addition to the “cognitive interviews,” Mr. Weir had access to at least two more sources of information to determine product attributes to use in his analysis: (a) Whirlpool’s presentations that identified purchase drivers for ovens and (b) oven sales data.<sup>228</sup> Mr. Weir did not clarify whether he utilized the sources of information about purchase drivers available to him while designing the conjoint survey. Additionally, Mr. Weir did not clarify what criteria he used to decide which attributes to include in his conjoint survey.<sup>229</sup> Ultimately, Mr. Weir included seven attributes with varying levels in his conjoint survey, excluding many attributes and attribute levels that would have been relevant

<sup>225</sup> In addition, I am unaware of any documentary evidence that shows Whirlpool uses (or has used) the terminology of “Drippings may need to be wiped out” when describing AquaLift or the Challenged Products.

<sup>226</sup> Weir Declaration, p. 12. (Bold text added for emphasis.)

<sup>227</sup> Weir Declaration, p. 7. (Bracketed text added for clarification.)

<sup>228</sup> Weir Declaration, pp. 4 and 31.

<sup>229</sup> Weir Declaration, pp. 10 – 11.



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to consumers purchasing ovens.<sup>230</sup> Thus, Mr. Weir's set of attributes included in the conjoint survey is incomplete and likely yield unreliable results because of at least the following factors.

- a. Attributes And Attribute Levels Are Inconsistent Between Conjoint Survey And Regression. To calculate claimed price premium damages, Mr. Weir proposed two alternative methodologies: conjoint analysis and hedonic regression.<sup>231</sup> In both methodologies, Mr. Weir identified a set of product attributes based upon the cognitive interviews, among other things.<sup>232</sup> The set of attributes included in Mr. Weir's conjoint analysis does not match the set of attributes included in his hedonic regression. Summarized in **Table 11** are the attributes included in his conjoint survey and hedonic regression. The rows highlighted in grey in **Table 11** show the attributes that were used only in one of the methodologies. For example, with respect to cleaning features, steam clean and EasyClean are included in the regression but left out of the conjoint survey. Mr. Weir did not provide any support or discussion for his choice of including different attributes in different analyses.

Furthermore, the results of Mr. Weir's hedonic regression indicate that all of the attributes excluded from the conjoint analysis were statistically significant. For example, in his hedonic regression, the coefficient on "Brand: Samsung" is similar and statistically significant at a higher level than the coefficient on "AquaLift."<sup>233</sup> Thus, within Mr. Weir's framework, the results of his hedonic regression show that Mr. Weir excluded from the conjoint analysis attributes that are relevant predictors of the price consumers are willing to pay.

<sup>230</sup> Weir Declaration, pp. 10 – 11.

<sup>231</sup> Weir Declaration, p. 5.

<sup>232</sup> Weir Declaration, pp. 7 and 31.

<sup>233</sup> Weir Declaration, Exhibit 4. The coefficient on the variable "AquaLift" is 0.114691 with a t-statistic of 29.50 and the coefficient on the variable "Brand: Samsung" is 0.114367 with a t-statistic of 44.15.

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**Table 11**  
**Comparison Of Attributes In Mr. Weir's Conjoint Analysis And Regression Analysis**

Attribute Identified By Mr. Weir	Attribute In Conjoint Analysis	Attribute In Regression Analysis
<b>Brand</b>		
Whirlpool, Maytag, Kitchen Aid, Jenn-Air	X	X
Kenmore	X	
Samsung, Frigidaire, GE, LG		X
<b>Oven Type</b>		
Wall Oven	X	Only Ranges Included
Range	X	Only Ranges Included
<b>Fuel</b>		
Electric	X	X
Natural Gas/Liquid Propane	X	X
Dual Fuel	X	X
<b>Finish</b>		
Stainless Steel	X	X
Black	X	X
White	X	X
Slate		X
Black Stainless Steel		X
<b>Cleaning Features</b>		
Manual Clean	X	X
Pyrolytic Self-Clean	X	X
AquaLift Self-Clean	X	X
AquaLift Partial-Clean	X	
Easy-Clean		X
Steam-Clean		X
<b>Other Features</b>		
Convection	X	X
Number Of Racks	X	X
Front vs Rear Controls	X	X
Digital Controls	X	
Control Lockout	X	
Double Oven		X
Number Of Burner Elements		X
Oven Capacity (Cubic Feet)		X



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- b. Numerous Other Important Attributes Are Omitted From The Conjoint Survey. Mr. Weir cited to a market research document by Whirlpool and stated that “the second-most important attribute in driving purchase choice is ‘Oven Cavity: cleaning.’”<sup>234</sup> [REDACTED] are excluded from Mr. Weir’s conjoint survey.<sup>235</sup> Several of these attributes are ranked higher in the order of “relative importance” than the attributes included by Mr. Weir.<sup>236</sup> For example, [REDACTED] which Mr. Weir included.<sup>237</sup> Mr. Weir chose to include [REDACTED] but omitted other features which are valued by consumers. Mr. Weir’s omission of these important attributes (and others) renders his analysis unreliable.

110. Despite having access to the information outlining important oven purchase drivers, Mr. Weir excluded attributes and attribute levels from his conjoint analysis. Additionally, Mr. Weir’s hedonic regression confirmed the excluded attributes were significant predictors of price. Thus, Mr. Weir’s conjoint survey omits attributes and attribute levels that would have been relevant to consumers purchasing ovens and present results which are likely to be unreliable.

**C. Mr. Weir’s Conjoint Survey Does Not Meet His Own Objectivity Criteria**

111. Mr. Weir asserted that he designed his conjoint survey in a way that did not influence survey participants’ objectivity nor reveal the purpose of the survey to the participants.

It is standard survey practice to avoid indicating the sponsor and/or purpose of the survey to ensure respondents’ objectivity and to make the respondent unaware of the sponsor and goal of the survey. Thus, no disclosure of the sponsor or the goal of the survey were made. And because the survey was administered via the Internet (as is common practice), respondents were not exposed to human interviewers, thereby eliminating the possibility of the survey administrator

<sup>234</sup> Weir Declaration, p. 4.

<sup>235</sup> [REDACTED]

“Cooking: Cleaning Insights,” Whirlpool Presentation dated January 7, 2014. (WSC0012939 – 966 at 957.)

<sup>236</sup> “Cooking: Cleaning Insights,” Whirlpool Presentation dated January 7, 2014. (WSC0012939 – 966 at 957.)

<sup>237</sup> “Cooking: Cleaning Insights,” Whirlpool Presentation dated January 7, 2014. (WSC0012939 – 966 at 957.)

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communicating the sponsor or purpose of the survey and influencing the outcome.<sup>238</sup>

112. In support of his assertion that he designed his conjoint survey so as to avoid influencing respondents' objectivity and revealing the purpose of the survey, Mr. Weir claimed to have pretested his survey design with 50 respondents for "quality control and quality assurance testing of the survey design," among other reasons.<sup>239</sup> Mr. Weir noted that during his pretest of the survey design, he "tested for demand artifacts, asking respondents about their beliefs about the sponsor and purpose of the survey."<sup>240</sup> Mr. Weir claimed that "[n]o demand artifacts were detected in the final design of the survey."<sup>241</sup>
113. Contrary to Mr. Weir's claim that his conjoint survey does not violate his objectivity criteria, his survey design contains aspects that likely would make clear the intentions of the survey and influence survey participants' answers. At least the following survey design choices appear to fail Mr. Weir's own objectivity criteria.

- a. Mr. Weir's Survey Design Isolated Cleaning Features From Other Features. Mr. Weir provided no basis as to why he separated his attribute category titled "Features" (which includes digital controls, convection, number of racks, control lockout, and front versus rear controls) from his attribute category titled "Cleaning Feature" (which contains the features of interest for the purpose of the survey: "AquaLift self-clean" and "AquaLift partial-clean").<sup>242</sup> Mr. Weir's decision to group other features while isolating cleaning features overemphasizes to respondents the importance of "Cleaning Features." Mr. Weir failed to provide any evidence that his emphasis on "Cleaning Features" does not create a "demand artifact," other than his claim that his pretest did not find any "demand artifacts."

Moreover, the importance of "Cleaning Features" is further indicated to the survey participants by the fact that the "Features" category does not identify the values for each of the other features grouped under that category, but instead the "Features" category only shows certain features that differ across the models in the choice sets. (See, e.g., **Figure 12.**) In other

<sup>238</sup> Weir Declaration, p. 8.

<sup>239</sup> Weir Declaration, p. 14.

<sup>240</sup> Weir Declaration, p. 14.

<sup>241</sup> Weir Declaration, p. 14. (Bracketed text added for clarification.)

<sup>242</sup> Weir Declaration, pp. 11 – 12.



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words, many of the other features were not listed in every choice set, while a “Cleaning Feature” was listed for every oven across all choice sets.

**Figure 12**  
**Example Choice Set From Mr. Weir’s Conjoin Survey<sup>243</sup>**

<b>Brand</b>	Jenn-Air	Whirlpool	Kitchen Aid
<b>Finish</b>	Stainless steel	Black	White
<b>Fuel</b>	Dual fuel (electric oven, gas cooktop)	Electric	Natural gas/liquid propane
<b>Features</b>	Control lockout	Digital controls	Extra rack
<b>Oven Type</b>	Range (Cooktop and oven)	Range (Cooktop and oven)	Wall oven
<b>Cleaning Feature</b>	AquaLift partial-clean	Manual clean (no self-clean)	Pyrolitic self-clean
<b>Price</b>	\$750	\$600	\$1200
	Select	Select	Select

- b. Given The Sample Of Whirlpool Customers, Mr. Weir’s Decision To Include Two Out Of Four Cleaning Features As AquaLift Features Likely Violated His Objectivity Criteria. Mr. Weir labeled two out of four levels for his “Cleaning Feature” category as “AquaLift self-clean” and “AquaLift partial-clean.”<sup>244</sup> Given Mr. Weir’s use of a sample of respondents that had purchased Whirlpool-branded ovens, the decision to use a Cleaning Features attribute in which two of the four levels were related to AquaLift could potentially (i) reveal the purpose of the survey and (ii) lead to biases in the results due to respondents who purchased an oven with AquaLift and/or have prior knowledge of AquaLift. This is especially likely given the omission of other cleaning features available in the market (e.g., “steam clean”), as discussed above.

<sup>243</sup> Weir Declaration, Exhibit 3. (Red boxes added for emphasis.)

<sup>244</sup> Weir Declaration, pp. 11 – 12.

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- i. By design, Mr. Weir's conjoint survey sample only includes participants who "purchased at least one **Whirlpool branded oven** during the last 36 months."<sup>245</sup> As a result, some of the respondents may have purchased an oven with AquaLift or, at the very least, have prior knowledge of AquaLift. Such respondents likely would infer from the levels of the "Cleaning Feature" attribute that the survey was conducted for the purpose of determining consumers' preferences regarding AquaLift (and potentially to determine the difference between the claimed "AquaLift self-clean" and "AquaLift partial-clean" values).
  - ii. Prior knowledge and/or opinions of AquaLift could bias responses, particularly given the fact that the two features of interest for the purpose of the survey are titled "AquaLift self-clean" and "AquaLift partial-clean." For example, if a participant knew of AquaLift and was dissatisfied with the feature, the responses of such a participant likely would be biased by the design and labels of the "Cleaning Features." Mr. Weir noted that out of the eight consumers of Whirlpool branded ovens he interviewed prior to designing his conjoint survey, all of the respondents who had purchased an oven with AquaLift "indicated that they had believed that AquaLift was a self-cleaning mechanism, were dissatisfied with the AquaLift feature, and would not have paid as much for their oven had they fully understood the true nature of AquaLift."<sup>246</sup>
- c. Mr. Weir Provided More Detailed Descriptions Of The Cleaning Feature Levels Than Of The Levels For The Remaining Attributes. Mr. Weir presented descriptions for cleaning features that systematically differ from the descriptions he provided for the other "distractor" attributes.<sup>247</sup>
- i. For example, the brand, oven type, fuel, and finish attributes included level descriptions that all could be presented on less than 2 lines in the tables included in the Weir Declaration, with some levels having a description that was identical (i.e., finish) or substantially similar (i.e., fuel) to the name of the level.<sup>248</sup> For the remaining distractor attribute (i.e., "features"), three of the five features contained similarly short descriptions and a fourth provided a single description for two different options (i.e., front versus rear controls). By contrast, the descriptions for cleaning features all required multiple lines in the table in the Weir Declaration.
  - ii. Similarly, the descriptions for all of the distractor attributes were presented either as single sentences or as phrases that were not complete sentences. By contrast, the descriptions for the cleaning features all included multiple sentences.

The differences in description length, and the use of multiple complete sentences, likely would have demonstrated to survey respondents that the cleaning feature was the attribute of interest

<sup>245</sup> Weir Declaration, p. 15. (Bold text added for emphasis.)

<sup>246</sup> Weir Declaration, pp. 7 – 8.

<sup>247</sup> See, e.g., Weir Declaration, p. 10, in which Mr. Weir categorized the attributes as either the attribute of interest (i.e., the cleaning feature) or distractor attributes.

<sup>248</sup> Weir Declaration, pp. 10 – 11.



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for the survey (at least it would have provided a subtle indication to focus on that attribute over the other attributes included in the survey).

**D. The Choice Sets Presented To Survey Participants Do Not Represent Realistic Product Choices Available In The Market**

114. Mr. Weir claimed that, in designing his conjoint survey, he “conducted research of actual retail prices and market data and included these real world price points in the survey.”<sup>249</sup> He further asserted that his conjoint survey “took into account actual marketplace prices and other supply-side considerations and therefore is able to measure marketplace outcomes.”<sup>250</sup> Contrary to Mr. Weir’s assertions, the choice sets presented in his conjoint survey include product choices that do not have “real world price points” and do not represent realistic product choices available in the market. As discussed in the remainder of this section, from an economic and damages perspective, such unrealistic choice sets may yield outcomes that are not consistent with actual consumer behavior.

**1. Prices Presented In Choice Sets Are Not Consistent With Real World Prices**

115. Based upon my review of the choice sets presented to survey participants, Mr. Weir allowed for only five possible oven prices in his choice sets: \$600, \$750, \$900, \$1,050, and \$1,200. These five price points were used for all five brands included in the conjoint survey: Whirlpool, Maytag, KitchenAid, Jenn-Air, and Kenmore. The total number of oven choices presented to survey participants (by brand and price) are presented in **Table 12**.<sup>251</sup>

<sup>249</sup> Weir Declaration, p. 21.

<sup>250</sup> Weir Declaration, p. 19.

<sup>251</sup> Based upon my review of Mr. Weir’s conjoint survey data, it is my understanding that he created 500 versions of the survey, containing 13 choice sets comprised of three oven choices (with one choice set the same across all versions and the remaining 12 choice sets chosen at random). Not all 500 versions of the survey were used, as some versions were given to more than one survey participant. In total, there were 560 survey participants and 21,840 oven choices presented to survey participants (including repeat oven choices). (Calculation: 560 participants × 13 choice sets per survey participant × 3 oven choices per choice set = 21,840 oven choices.)

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**Table 12**  
**Total Number Of Oven Choices Presented To Survey Participants**  
**By Oven Brand And Price**

Brand	Oven Price				
	\$600	\$750	\$900	\$1,050	\$1,200
Whirlpool	815	790	834	1,402	766
Maytag	796	832	1,390	762	806
KitchenAid	769	789	843	816	811
Jenn-Air	791	799	794	854	785
Kenmore	844	800	756	802	1,394

116. A comparison of H.H. Gregg retail prices and the five price points contained in Mr. Weir's conjoint survey indicates that Mr. Weir's prices are not consistent with what actually exists in the market. Presented in **Table 13** are summary statistics of the actual retail prices of the Whirlpool-branded ovens at H.H. Gregg.<sup>252</sup> The table also shows the number of oven choices presented to survey participants that were listed at a price below the 10<sup>th</sup> percentile retail price or above the 90<sup>th</sup> percentile retail price of the respective brand.<sup>253</sup>
117. The following observations can be made from **Table 13** (in conjunction with **Table 12**):
- 65.2% of Whirlpool oven choices presented to survey participants were listed at a price above the 90<sup>th</sup> percentile retail price of the H.H. Gregg sales data.<sup>254</sup>
  - 64.5% of Maytag oven choices presented to survey participants were listed at a price above the 90<sup>th</sup> percentile retail price of the H.H. Gregg sales data.<sup>255</sup>
  - 79.9% of KitchenAid oven choices presented to survey participants were listed at a price below the 10<sup>th</sup> percentile retail price of the H.H. Gregg sales data.<sup>256</sup>

<sup>252</sup> Kenmore ovens are not included in this analysis as Kenmore ovens are not sold at H.H. Gregg.

<sup>253</sup> For each respective brand, 90% of the observed prices are above the 10<sup>th</sup> percentile retail price and only 10% of the observed prices are above the 90<sup>th</sup> percentile retail price.

<sup>254</sup> Calculation:  $3,002 \div 4,607 = 0.652$ .

<sup>255</sup> Calculation:  $2,958 \div 4,586 = 0.645$ .

<sup>256</sup> Calculation:  $3,217 \div 4,028 = 0.799$ .



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- d. 100% of Jenn-Air oven choices presented to survey participants were listed at a price below the 10<sup>th</sup> percentile retail price of the H.H. Gregg sales data. (See **Exhibit 23**.)



118. Mr. Weir's unrealistic choice set price points (i.e., use of too high prices for Whirlpool and Maytag oven choices and too low prices for KitchenAid and Jenn-Air prices) can be further illustrated by comparing his five price points to all retail prices at H.H. Gregg. For example, **Figure 13** presents a scatter plot of actual prices of all Jenn-Air ovens sold at H.H. Gregg from January 2012 to June 2017.<sup>257</sup> Approximately 98.7% of total Jenn-Air ovens sold at H.H. Gregg during this time period were sold at a price higher than \$1,200 (i.e., the highest price of Jenn-Air oven choices in Mr. Weir's conjoint survey). (See **Exhibit 24**.)

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<sup>257</sup> Similar figures for Whirlpool, Maytag, and KitchenAid are contained in the exhibits to my declaration.

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## **2. Unrealistic Choice Sets May Yield Unreliable Survey Results**

119. From an economic and damages perspective, unrealistic choice sets may yield outcomes that are not consistent with actual consumer behavior. For example, **Figure 14** presents one of the example choice sets contained in the Weir Declaration. The first product is a Jenn-Air oven with numerous desirable features, including stainless steel finish, dual fuel, and a cooktop. The third product is a KitchenAid oven with less desirable features within the same attribute categories, such



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as a white finish, natural gas/liquid propane, and no cooktop (i.e., a wall oven).<sup>258</sup> Despite the presence of less desirable (and less valued) features, the KitchenAid oven (\$1,200) is almost twice the price of the Jenn-Air oven (\$750). Two observations can be made about these choices. First, what appears to be a lower-valued choice is given a higher price. Second, in this example, for a survey participant to select the KitchenAid over the Jenn-Air, the following must be true: pyrolytic self-clean (as opposed to AquaLift partial-clean) and an extra oven rack are more valuable to the participant than having more desirable attributes across all other dimensions (including a generally accepted higher valued brand) and this incremental value must compensate the participant for the \$450 price difference.

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<sup>258</sup> It appears to be reasonable to assume, holding all else equal, that (a) white finish is less desirable than stainless steel, (b) gas is less desirable than dual fuel, and (c) no cooktop is less desirable than having a cooktop. Alternatively stated, it is reasonable to assume, holding all else equal, that an oven with such attributes would be less expensive than an oven with a stainless steel finish, dual fuel capabilities, and having a cooktop.

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**Figure 14**  
**Example Choice Set From Mr. Weir's Conjoint Survey<sup>259</sup>**

<b>Brand</b>	Jenn-Air	Whirlpool	Kitchen Aid
<b>Finish</b>	Stainless steel	Black	White
<b>Fuel</b>	Dual fuel (electric oven, gas cooktop)	Electric	Natural gas/liquid propane
<b>Features</b>	Control lockout	Digital controls	Extra rack
<b>Oven Type</b>	Range (Cooktop and oven)	Range (Cooktop and oven)	Wall oven
<b>Cleaning Feature</b>	AquaLift partial-clean	Manual clean (no self-clean)	Pyrolitic self-clean
<b>Price</b>	\$750	\$600	\$1200
	Select	Select	Select

120. Despite Jenn-Air oven choices in Mr. Weir's conjoint survey being significantly underpriced compared to actual Jenn-Air prices, there were many instances in which survey participants could have but did not select a Jenn-Air oven. Based upon my analysis of Mr. Weir's conjoint survey results, it appears there is little to no impact of brand in Mr. Weir's conjoint analysis. For example, the following observations can be made from analysis of the survey results.

- a. Of the 3,659 instances in which a survey participant was presented a choice set with a Jenn-Air oven as one out of the three oven choices, the survey participant selected the Jenn-Air oven in approximately 31.5% of those instances. In other words, there was approximately an one-third chance that a Jenn-Air oven was selected when one out of three oven choices was a Jenn-Air oven.

<sup>259</sup> Weir Declaration, Exhibit 3.



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- b. Of the 182 instances in which a survey participant was presented a choice set with a Jenn-Air oven as two out of the three oven choices, the survey participant selected the Jenn-Air oven in approximately 61.5% of those instances. In other words, there was approximately a two-third chance that a Jenn-Air oven was selected when two out of three oven choices were Jenn-Air ovens. (See **Exhibit 25**.)

121. In the light of the observations above, there does not appear to be a significant impact of brand on survey participants' selections. In reality, brands vary in marketing and prices (e.g., high-priced Jenn-Air brand vs. lower-priced Whirlpool brand), which result in varying consumer preferences for individual brands. The observation that brand did not appear to impact survey participants' choices indicates that Mr. Weir's conjoint analysis is not reliable from an economic and damages perspective.

**E. The Assumptions Survey Participants Were Asked To Make Regarding The Choice Sets Can Yield Unreliable Results**

122. Mr. Weir's survey instructs the respondent to make the following assumptions prior to answering the conjoint survey exercises.
  - a. "Any features not shown in the exercise are assumed to be the same across the possible choices presented."<sup>260</sup>
  - b. "Assume that all of the ovens are of the same size/capacity, are of the same durability, have the same warranty, and are of a design that you [participant] would find appealing."<sup>261</sup>
  - c. "Each oven shown is offered by the same retailer, so any preference you [participant] may have for a particular retailer should not matter."<sup>262</sup>
  - d. "[T]here were no other options available AND all other features not mentioned in the exercise were the same across the ovens shown."<sup>263</sup>

<sup>260</sup> Weir Declaration, Exhibit 3. See also Weir Declaration, pp. 9 – 10.

<sup>261</sup> Weir Declaration, Exhibit 3. See also Weir Declaration, pp. 9 – 10. (Bracketed text added for clarification.)

<sup>262</sup> Weir Declaration, Exhibit 3. See also Weir Declaration, pp. 9 – 10. (Bracketed text added for clarification.)

<sup>263</sup> Weir Declaration, Exhibit 3. (Bracketed text added for clarification.)

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123. However, simply asking respondents to assume the same capacity, durability, and other non-specified features does not adequately control for these other features. Issues associated with this instruction include at least the following.

- a. Underlying assumptions regarding different features are likely to vary across participants.
- b. Mr. Weir's "Features" attribute, which compares different features across different choices in a choice set, likely contradicts the instructions prompt and causes confusion for survey participants.

**1. Underlying Assumptions Regarding Features Are Likely To Vary Across Participants**

124. Mr. Weir stated that respondents were asked to assume that "[a]ny features not shown in the exercise are assumed to be the same across the possible choices presented."<sup>264</sup> Mr. Weir did not discuss how different assumptions across participants about product features which are not included as attributes in his conjoint survey would impact his results. For example, oven door aesthetics [REDACTED]

[REDACTED]<sup>265</sup> However, Mr. Weir's survey did not include oven door aesthetics as an attribute. Given that this feature was not included in the survey, participants may make varying assumptions about the oven doors such as glass door versus stainless steel door, drop-down open door versus side-open doors, etc. Depending upon the extent of variation in the assumptions made by the participants, the same survey choices may be interpreted differently by participants. Specifically, while one participant may view the options shown in **Figure 14** as a wide glass-window, drop-down open door oven with an automatic light, another might view them as a narrow window, stainless steel side-door

<sup>264</sup> Weir Declaration, Exhibit 3. *See also* Weir Declaration, pp. 9 – 10. (Bracketed text added for clarification.)

<sup>265</sup> "Cooking: Cleaning Insights," Whirlpool Presentation dated January 7, 2014. (WSC0012939 – 966 at 957.) *See also* Weir Declaration, p. 4.



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oven without an automatic light. This creates unintended variation in the product attributes presented to participants. There is a lack of information about (a) how the participants chose which features to make assumptions about and (b) what assumptions they made. Thus, Mr. Weir did not demonstrate that assumptions made by participants will not affect the validity of his conjoint analysis.

125. Allowing participants to assume availability of any and all excluded features, especially when the attribute list included in the survey is not comprehensive and does not include important attributes identified as demand drivers, can yield unreliable survey within the conjoint analysis as proposed by Mr. Weir.

**2. Mr. Weir's "Features" Attribute Contradicts The Instruction Prompts And Can Cause Confusion For Survey Participants**

126. Mr. Weir instructed respondents to assume that "there were no other options available AND all other features not mentioned in the exercise were the same across the ovens shown"<sup>266</sup> However, these instructions contradicted the attributes listed in the conjoint survey and create the potential for confusion among the participants. An example of an attribute in Mr. Weir's conjoint survey that could have caused confusion among participants is "Features."<sup>267</sup> Typically, an attribute has levels that can be compared to each other (stainless steel finish versus black finish). However, the "Features" attribute has five distinct incomparable levels: digital controls, convection, number of racks, control lockout, and front versus rear control.<sup>268</sup> Unlike other attributes, this attribute does not include levels within the same feature, but compares different features across different

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<sup>266</sup> Weir Declaration, Exhibit 3. (Emphasis in original.)

<sup>267</sup> Weir Declaration, p. 11.

<sup>268</sup> Weir Declaration, p. 11.

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choices in a choice set.<sup>269</sup> In the example shown by Mr. Weir (as reproduced above in **Figure 14**), a Whirlpool oven with digital controls as the “Features” attribute is compared with a KitchenAid oven with an extra rack as the “Features” attribute. Given the assumption that “there were no other options available AND all other features not mentioned in the exercise were the same across the ovens shown,”<sup>270</sup> it is unclear whether a survey participant should assume that (a) there is a trade-off between digital controls and an extra rack, and no oven that offers both exists in the market, or (b) because digital controls is not mentioned in the KitchenAid option, it can be assumed to be present. In such scenarios, Mr. Weir’s instructions could create confusion and it is unclear what assumptions the participants made. Thus, to the extent that the assumptions made were unclear and lacked consistency across participants, Mr. Weir’s conjoint analysis results would be unreliable.

**F. Mr. Weir’s Conjoint Survey Does Not Provide A Value Tied To The Putative Class Period**

127. Mr. Weir opined that “the survey findings are projectable to all class members and class purchases of Whirlpool branded AquaLift ovens for the class period of 2012 through the present.”<sup>271</sup> However, survey techniques such as conjoint analysis generally measure the value of product attributes at the point in time of the survey and cannot easily determine the value of attributes in the past. Hence, the values that Mr. Weir obtained from his conjoint survey and market simulation are based upon tastes and preferences of consumers in 2018. However, he represents that the putative Class period begins in 2012. There are no assurances that values based upon current survey responses would be representative of (or correlated with) putative Class members’

<sup>269</sup> There is no nexus between the different levels, and a consumer can prefer to have both levels at the same time.

<sup>270</sup> Weir Declaration, Exhibit 3. (Emphasis is original.)

<sup>271</sup> Weir Declaration, p. 20.



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preferences associated with AquaLift from approximately five years prior to Mr. Weir's survey.<sup>272</sup>

Mr. Weir's projection of the survey findings to the entire putative Class period is flawed for at least the following reasons.

- a. Mr. Weir Provided No Analytical Discussion Or Investigation To Demonstrate That His Findings Regarding Consumer Preferences Would Apply Over The Entire Putative Class Period. Mr. Weir stated that during his pretest interviews, he inquired about whether the participants believed that "their feelings about AquaLift ovens would be different: over the last 5 years; across types or finishes of ovens; or across price points."<sup>273</sup> Based upon eight interviews, Mr. Weir assumed there have not been any changes in the underlying value of attributes or tastes and preferences regarding oven purchases over the entire Class period.<sup>274</sup> However, Mr. Weir did not establish that his assumption of constant attribute value and consumer preferences with respect to AquaLift based upon only eight interviews is valid.

Mr. Weir's use of retrospective assessment of "feelings about AquaLift" by eight interviewees is not sufficient to construct a Class-wide assumption of constant attribute value and constant consumer preferences during the entire putative Class period. Not only did Mr. Weir fail to offer any objective indicator of constant attribute value and consumer preferences regarding AquaLift over the putative Class period, he also did not establish that "feelings" of a small group of interviewees is a sufficient basis to generalize his results over the entire putative Class, especially given the number of models introduced and discontinued over the entire putative Class period.

- b. Internal Inconsistencies In Mr. Weir's Arguments. Mr. Weir stated that the interviewees indicated that "their decisions vis a vis AquaLift ovens would be consistent over time, types/finishes, and prices."<sup>275</sup> It appears that Mr. Weir is interpreting interviewees' decisions about ovens with AquaLift to not vary with prices, type of oven, or time. However, Mr. Weir's own declaration provides multiple examples that contradict this finding and its generalization to the entire Class.
- i. Assertion Regarding "Consistent" Decisions Across Prices. Mr. Weir's assertion regarding "consistent" decisions across price points appears to be assuming that

<sup>272</sup> Mr. Weir restricted his sample to respondents who had purchased at least one Whirlpool branded oven during the last 36 months. (Weir Declaration, p. 15.) However, even under such a sample restriction, Mr. Weir's survey (absent other flaws rendering it unreliable) only would be capable of obtaining information about those respondents' preferences at the time of the survey. If his respondents' preferences have changed from the putative Class period until the time of the survey, then Mr. Weir's survey would provide no measure of what their preferences were during the putative Class period.

<sup>273</sup> Weir Declaration, p. 20.

<sup>274</sup> Weir Declaration, pp. 7 and 20. Mr. Weir mentioned that he based his opinion upon "pretest interviews." While in his discussion of the interviews he conducted prior to designing and conducting the conjoint survey, Mr. Weir did not use the word pretest, it was the only time he mentioned interviews. (Weir Declaration, pp. 7 – 8.) Thus, it appears Mr. Weir is referring to these interviews as "pretest interviews."

<sup>275</sup> Weir Declaration, p. 20.

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interviewees' decision regarding ovens with AquaLift would have not changed, no matter what price was offered. In other words, this assumption suggests that interviewees' preferences were constant across price. However, Mr. Weir stated that "economic theory dictates that all else equal, people prefer to pay less than to pay more."<sup>276</sup> Thus, the assumption of constant preferences across prices contradicts the economic theory of preference for lower prices over higher prices, all else equal.

- ii. Changes In Consumer Preferences. Mr. Weir assumed that consumers' preferences have been constant during the putative Class Period. However, in his "Supply Side Considerations," Mr. Weir acknowledged consumer preferences changed over time.<sup>277</sup> Specifically, Mr. Weir stated that "[m]any major retailers and manufacturers identify a willingness to adjust prices in response to changing economic conditions and consumer preferences."<sup>278</sup>

128. Analysis of the H.H. Gregg sales data used in Mr. Weir's hedonic regression analysis shows that consumer preferences for the attributes studied in his conjoint survey have varied over the putative Class period. For example, an analysis of sales trends of different oven finishes shows that unit sales of white, black, and slate finish ovens as a percentage of total oven sales have declined from 2012 to 2016, while unit sales of stainless steel and black stainless steel finish ovens as a percentage of total oven sales have increased during this time period.<sup>279</sup> (See **Figure 15** and **Exhibit 26.**) Based upon the evidence presented, Mr. Weir's assumption about constant consumer preferences during the putative Class period is invalid.

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<sup>276</sup> Weir Declaration, p. 16.

<sup>277</sup> Weir Declaration, p. 22.

<sup>278</sup> Weir Declaration, p. 22. (Bracketed text added for clarification.)

<sup>279</sup> The exhibits to my declaration contain similar analyses of sales trends by (a) convection functions and (b) number of burner elements. In addition, an analysis of trends in unit sales by finish and fuel type is presented in **Exhibit 27.**